

ABSTRACT OF THE DISCLOSURE

5 A determining method of movement sequence and a  
positioning apparatus of the invention are arranged in  
such a manner that, in order to measure positions of  
plural marks as being measurement targets provided on  
a wafer within a shorter time, a group including  
executable movement sequences is generated out of a  
group of movement sequence candidates, each indicating  
a measurement order of these marks, and a movement  
10 sequence that accomplishes a movement operation  
between the marks within the shortest time is obtained  
from the group thus generated.

15 For efficiently searching an optical system as a  
globally optimal solution within a shorter computation  
time, independently of an initial solution given, a  
designing method of optical system of the invention  
obtains the optimal solution of the optical system to  
be designed, using an evolutionary computation method  
(genetic algorithm) having a genetic operator for  
20 handling continuous values explicitly. Particularly,  
from a partial space defined by a predetermined  
continuous occurrence probability distribution of  
occurrence probabilities set based on parent  
individuals, child individuals to be candidates in the  
25 next generation population are generated according to  
the occurrence probabilities.